

BELOUS, A.M. [Bilous, A.M.]

Concentration of some trace elements in developing regenerates of femoral fractures in pigeons. Ukr. biokhim. zhur. 33 no.6:856-863 '61. (MIRA 14:12)

1. Ukrainian Research Institute for Orthopedics and Traumatology, Kharkov.

(TRACE ELEMENTS) (REGENERATION (BIOLOGY))  
(FEMUR FRACTURE)

BELOUS, A.M., referent

Report on the work of the societies of traumatologists and  
orthopedists from June through August 1962. Ortop., ~~travm.~~1  
protez. 23 no.11:92-93 N 162. (MIRA 16:4)  
(ORTHOPEDY) (TRAUMATISM)

BELOUS, A.M.; SKOBLIN, A.P.

Silicon content in bone callus in experimental fractures. Biol.  
eksp. biol. i med. 53 no.5:72-75 My '62. (MIRA 15:7)

1. Iz Ukrainського naučno-issledovatel'skogo instituta orto-  
pedii i travmatologii imeni prof. M.I. Sitenko (dir. - ohlen-  
korrespondent AMN SSSR prof. N.P. Novachenko), Khar'kov.  
Predstavlena deystvitel'nym ohlenom AMN SSSR V.V. Parinym.  
(FRACTURES) (SILICON IN THE BODY)  
(CALLUS)

SKOBLIN, A.P., doktor med. nauk; BEIOUS, A.M.

Content of titanium, silicon and vanadium in the osseous system  
following bone autoplasty. Ortop., travm. i protez. no.9:58-66  
'62. (MIRA 17:11)

1. Iz Ukrainskogo instituta ortopedii i travmatologii imeni M.I.  
Sitenko (dir. - chlen-korrespondent AKA SSSR prof. N.F. Novachenko).

BELOUS, A.M., referent.

Report on the work of the societies of traumatologists and  
orthopedists for October and November 1962. Ortop. travm.  
i protez. 24 no.2:89-94 F'63. (MIRA 16:10)  
(NO SUBJECT HEADINGS)

BELOUS, A.M., kand. med. nauk, referent

Report on the work of the societies of traumatologists  
and orthopedists for November 1962. Ortop., travm. i protez.  
24 no.3:85-90 Mr '63. (MIRA 17:2)

SKOBLIN, A.P., doktor med. nauk, referent; BELOUS, A.M., kand.med.nauk

Report on the work of the societies of traumatologists and  
orthopedists in April and May 1963. Ortop., travm.i protez. 24  
no.9:65-71 S '63. (MIRA 17:4)

SKOBLIN, A.P., doktor med. nauk, referent; BELOUS, A.M., kand. med. nauk,  
referent

Report on the activity of the societies of traumatologists and  
orthopedists for July 1963. Ortop., travm. i protez. 24 no.11:  
89-90 N '63. (MIRA 17:10)



SKOBLIN, A.P., doktor. med. nauk, referent; BELOUS, A.M., kand. med. nauk, referent

Report on the activity of the societies of traumatologists and orthopedists for October, 1963. Ortep., travm. i protez. 25 no.1:87-93 Ja '64. (MIRA 17:9)

SKOBLIN, A.P., doktor med. nauk; BELOUS, A.M., kand. med. nauk

Report on the activity of the societies of traumatologists and  
orthopedists for November and December 1964. Ortop., travm. i  
protez. 25 no.4:78-86 Ap '64 (MIRA 18:1)

SKOBLIN, A.P., doktor med.nauk; BELOUS, A.M., kand.med.nauk

Report on the work of the societies of traumatologists  
and orthopaedists for August-September, 1964. Ortop., travm.  
1 protes. 25 no.12:74 D '64. (MIRA 19:1)

BERDASHKEVICH, Ya.A.; ~~BELOUS, A.M.~~; BOROVITSKAYA, A.I.; YENGALYCHENYA, H.A.;  
POGREBNIYAK, B.A.; SOKOL, G.M.; TARASENKO, N.N.

Occurrence of traumatic orthopedic diseases among rural and  
urban population. Ortop., travm. i protez. 26 no.11:60-66  
N '65. (MIRA 18:12)

1. Iz Khar'kovskogo instituta protezirovaniya, travmatologii  
i ortopedii imeni M.I. Sitenko (direktor - chlen-korrespondent  
AMN SSSR prof. N.P. Novachenk). Adres avtorov: Khar'kov,  
Pushkinskaya ul. d. 80, Institut imeni M.I. Sitenko.

TYURIN, Yu.M.; VESELOVA, E.V.; KURATOVA, V.A.; KOVSEMAN, Ye.P.,  
BELOUS, A.P.

Electrolysis of monomethyl ester of adipic acid in methanol  
solution. Zhur.pril.khim. 35 no.5:1082-1092 Hy '62. (NTRA 15:5)

1. Leningradskiy filial Gosudarstvennogo Instituta azotnoy  
promyshlennosti.

(Adipic acid)

(Electrolysis)

CH BELLOUS

1ST AND 2ND ORDERS PROCESSES AND PROPERTIES MIX

Dyeing with basic dyes. N. I. Koshin and A. T. Belous. Russ. 30,737, Nov. 30, 1934. In the dyeing with sulfurized phenols of the type of the fixing agent "T" the leuco compd. of the fixing agent is oxidized with a soln. of any of the oxidizers used in the impregnation of fabrics. For example,  $\text{CrO}_3$ ,  $\text{H}_2\text{SO}_4$ , or nitrite may be used first, followed by acid treatment, washing and dyeing in the usual manner.

ASAC-SLA METALLURGICAL LITERATURE CLASSIFICATION

SEARCHED SERIALIZED INDEXED FILED

NOV 30 1934

U.S. DEPT. OF COMMERCE

STEEL DIVISION

STEEL RESEARCH DIVISION

1ST AND 2ND PAPERS										PROCESSES AND PROPERTIES INDEX										3RD AND 4TH PAPERS									
BETANS, H. T.																				25									
ca										<p>The relationship of certain dyes to the mercerization of fibers. A. T. Dehous and L. V. Vedenine. <i>Tekstil. Prom.</i> 7, No. 10, 30-40 (1947).—The depth of colors produced in dyeing mercerized fibers was found to be uniformly greater than in dyeing unmercerized fibers.</p> <p>Marshall Sittig</p>																			
<p>ASAC-SLA METALLURGICAL LITERATURE CLASSIFICATION</p> <p>1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100</p>																													

BELOUS, A.T.

Band-pass filters in instruments for simultaneous spectrum  
analysis. Izv. AN Turk.SSR.Ser.fiz.-tekh., khim. i nauk  
no.5:13-24 '65. (MIRA 18:11)



TRUTSE, Yu.L.; KHANBERDYEV, A.; HELOUS, A.T.

Radioobservations of meteoric activity in Ashkhabad, July-September  
1957. Izv. AN Turk. SSR no.3:118-120 '58. (MIRA 11:9)

1. Institut fiziki i geofiziki AN Turkmenskoy SSR.  
(Meteors--July) (Meteors--August) (Meteors--September)

**BELOUS, A.T.; ASTAPOVICH, L.G.**

Radar observations of meteor activity made at Ashkhabad from October 1957 to June 1958 as part of the program of the International Geophysical Year. Izv. AN Turk. SSR no.2:96-101 '59.  
(MIRA 12:6)

1. Institut fiziki i geofiziki AN Turkmenskoy SSR.  
(Meteors)

BELOUS, A.T.; LYUBARSKAYA, A.

Radar observations in Ashkhabad during the period of October-  
December 1958. Izv.AN Turk.SSR no.3:93-95 '59.  
(MIRA 12:11)

(Meteors)

25102 25102  
S/165/60/000/005/003/003  
A104/A129

3.1710  
3.1700 (1172, 1126, 1060)  
AUTHORS: Belous, A.T.; Lyubarskaya, A.G.

TITLE: Radar observations of meteors at Ashkhabad in July - December 1959

PERIODICAL: Akademiya nauk Turkmenskoy SSR. Izvestiya. Seriya fiziko-tekhnicheskikh, khimicheskikh i geologicheskikh nauk, no. 5, 1960, 143 - 144

TEXT: Observations were carried out in the Astrofizicheskaya laboratoriya fiziko-tekhnicheskogo instituta Akademii nauk Turkmenskoy SSR (Astrophysic Laboratory of the Physicotechnical Institute of the Academy of Sciences of the Turkmenskaya SSR) in accordance with the World Geophysical Year Program. A standard radar installation of following specifications was used: carried frequency 72 Mc; sending frequency 50 pulses per second; pulse capacity 80 kw. The wave channel antenna was orientated westwards at an inclination angle of  $22^{\circ}$  towards the horizon plane. The medium point of the antenna was located at the level of two wavelengths above the earth. Meteoric echos were registered onto a PQ-3 (RF-3) tape moving at 310 mm/h. Observations continued for 1,528 h during which 12,328 meteors were registered, 2,050 of them lasting 1 sec or longer. Distribution accord-

Card 1/A2

25102      25102  
S/165/60/000/005/003/003  
A104/A129

Radar observations of meteors at....

ing to duration is shown in Table 1. There is 1 table.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN Turkmenkoy SSR (Physico-Technical  
Institute AS Turkmenkaya SSR)

SUBMITTED: June 17, 1960

Table 1: Distribution of radio meteors according to duration.

Card 2/42

BELOUS, A.T.; LYUBARSKAYA, A.G.

Radar observations of meteors in Ashkhabad in July-September 1959.  
Izv.AN Turk.SSR.Ser.fiz.-tekh., khim.i geol.nauk no.1:121-127 '61.  
(MIRA 14:8)  
(Meteors)

BELOUS, A.T.; SAVRUKHIN, A.P.; INOZEMTSEV, Yu.A.

Radar observations of the Geminid meteor shower in 1958. *Izv. AN Turk. SSR. Ser. fiz.-tekh., khim, i geol. nauk* no. 3:23-27 '61. (MIRA 14:7)

1. Fiziko-tekhnicheskiy institut AN Turkmenskoy SSR.  
(Meteors) (Radar in astronomy)

3.1220  
3.1230  
3.1710

43288

S/831/62/000/008/009/016  
EO32/E514

AUTHORS: Belous, A.T., Gul'medov, Kh.D., Inozemtsev, Yu.A.,  
Lyubarskiy, K.A., Kalyakina, M.I. and Sadykov, Ya.F.

TITLE: Meteor observations at Ashkhabade

SOURCE: Ionosfernyye issledovaniya (meteory). Sbornik  
statey, no.8. V razdel programmy MGG (ionosfera).  
Mezhduved. geofiz. kom. AN SSSR. Moscow, Izd-vo AN  
SSSR, 1962, 64-68

TEXT: The Astrofizicheskaya laboratoriya IFG AN Turkmen'skoy  
SSR (Astrophysics Laboratory IFG AS Turk.SSR) has carried out  
systematic studies of meteors during the IGY with a view to  
obtaining observational material under the following three main  
headings: 1) meteor activity as an ionizing factor in the  
atmosphere; 2) determination of the density and height of the  
homogeneous atmosphere; 3) determination of wind distribution in  
the upper atmosphere from observations of meteor-trail drift.  
The observations were carried out visually (with and without  
telescopes), photographically and by radar. In addition, there  
were spectral observations of meteors and telescopic observations  
Card 1/3



Meteor observations at Ashkhabade      S/831/62/000/008/009/016  
EO32/E514

of meteor trails. The results of these observations will be published later. The present paper gives a summary of the experimental methods. All the observations were carried out in accordance with the IGY programme and instructions. The visual observations without instruments were carried out by two people who observed the sky through an aperture 2 m in diameter placed at a height 2 m above the earth's surface and parallel to it. Each observer was placed horizontally along the meridian, his head pointing north and his eye located at the centre of the aperture. Altogether 5016 meteors were observed over a period of 600 hours. The telescopic visual observations were carried out with two identical binoculars separated by 0.505 km with a magnification of X12 and a field diameter of 3.3°. The limiting stellar magnitude was 10. Altogether 650 meteors were recorded in approximately 450 hours and 176 parallaxes were obtained for them. The radar observations were carried out with standard radar apparatus giving 80 kW/pulse at a repetition frequency of 50 cps and a carrier frequency of 72 Mc/sec. The mean point of the seven-element antenna was 22° above the horizon, facing west. Altogether during the 16 months of the IGY, 6216 radio  
Card 2/3

S/831/62/000/008/009/016  
E032/E514

meteors were recorded (4070 hours). The photographic observations were carried out at two points separated by 20.77 km. One of the points had a set of four Xenon cameras ( $F = 12.5$  cm,  $D:F = 1:2$ , frame size  $9 \times 12$ ). The other point had four  $\text{H}\alpha\text{A}-3\text{c}/25$  (NAFA-3s/25) cameras with  $\text{Y}\rho\alpha\text{H}-9$  (Uran-9) objectives ( $F = 25$  cm,  $D:F = 1:25$ , frame size  $18 \times 24$ ). In each case the cameras covered an area of about 7000 sq.deg around the zenith. The axes of the two sets were at  $10^\circ$  to each other, which corresponded to meteor heights of 80-100 km. One of the photographic stations included a rotating shutter which facilitated meteor trail measurements. Altogether 100 meteor photographs were obtained (18 parallaxes). The spectral observations were begun in May, 1958 (ordinary flint prisms, dispersion  $575 \text{ \AA/mm}$ ). The total number of spectra which were obtained was eight; they contained a large number of lines. Finally, the meteor trails were investigated using a Hertz  $8 \times 30$  binocular with a  $6^\circ$  field of view. Twenty persistent trails were recorded during the IGY period, of which three were also recorded at the two photographic points.

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BELOUS, A.T.; INOZEMTSEV, Yu.A.; LYUBARSKAYA, A.G.; SAVRUKHIN, A.P.

Number of meteorites recorded annually by radar and its changes  
as observed in Ashkhabad in 1959. Izv.AN Turk.SSR.Ser.fiz.-tekh.,  
khim.i geol.nauk no.1:24-29 '62. (MIRA 16:12)

1. Fiziko-tekhnicheskiy institut AN Turkmenskoy SSR.

BELOUS, A.T.; PETINOV, V.P.

Feasibility of contactless measurement of the thickness of glass.  
Izv.AN Turk.SSR.Ser.fiz.-tekh., khim.i geol.nauk no.3:13-19  
'63. (MIRA 17:3)

1. Fiziko-tekhnicheskiy institut AN Turkmenskoy SSR.

BELOUS, A.T.; SEYL', F.R.; MEY, Ye.M.; AVESOV, V.L.

Electronic dynamoscope with a zero reading line and load  
scale. Neft. khoz. 42 no.6:43-46 Je '64. (MIRA 17:8)

IVANOV, S.I.; ASTAPOV, S.I.; BELOUS, B.A., otv.red.; PEVZNER, A.S., sav.  
red.isd-va; OSENKO, L.M., tekhn.red.

[Uniform time and pay standards for construction, assembly, and repair operations in 1960] Edinye normy i rastsenki na stroitel'nye, montashnye i remontno-stroitel'nye raboty, 1960 g. Moskva, Gos.isd-vo lit-ry po stroit., arkhitekt. i stroit.materialam. Sbornik 23. [Electric-wiring operations] Elektromontashnye raboty. No.4. [200 kv. electric cable lines] Kabel'nye linii napriazheniem do 220 kv. 1960. 51 p. (MIRA 13:6)

1. Russia (1923- U.S.S.R.) Gosudarstvennyy komitet po delam stroitel'stva. 2. Tsentral'noye normativno-issledovatel'skoye byuro (TsNIB) Ministerstva stroitel'stva elektrostantsiy (for Ivanov). 3. Normativno-issledovatel'skaya stantsiya (NIS) No.9 Tsentral'nogo normativno-issledovatel'skogo byuro Ministerstva stroitel'stva RSFSR (for Astapov).

(Wages)

(Electric cables)

BELOUS, B.

P

Svyaz'Energosistem. (Power net connections) Moskva, Gosenergo'zdat 1948.

278 P. Illus., Diagr., Tables.

"Spisok Literaturny": P. (279)

BETIN, B.M.; ARSHINOV, S.S., red.; BELOUS, B.P., red.; BABOCHKIN,  
S.N., *takhn.* red.

[Radio transmitting devices; theory and design] Radiopere-  
daiushchie ustroistva; teoriia i raschet. Moskva, Gosenergo-  
izdat, 1951. 440 p. (MIRA 16:7)  
(Radio--Transmitters and transmission)



BELOUS, B. P.

Vysokochastotnaia sviaz' po liniyam elektroperedachi [High-frequency communication along electric lines]. Moskva, Gosenergoizdat, 1952. 280 p.

SO: Monthly List of Russian Accessions, Vol. 6, No. 5, August 1953.

BELOUS, B. P.

USSR/Electricity - Literature

Jul 53

"New Books on Electricity, Electrical Engineering,  
and Electric Power Engineering, Published in 1953"

Elektrichestvo, No 7, p 96

Lists 15 titles published in USSR in 1953, includ-  
ing 2 translations from English and the following:

(1) Belous, B. P., "High-Frequency Communications  
by Electric Power Transmission Lines" ("Vysoko-  
chastotnaya svyaz' po liniyam elektroperedachi"),  
280 pp; (2) Sivers, A. P., "Radar Receivers. Cal-  
culation and Planning" ("Radiolokatsionnyye

271T61

priemniki. Raschet i proyektirovaniye"), 392 pp;  
(3) Shchegolev, G. S., "Turbines for Large Hydro-  
electric Power Stations" ("Turbiny krupnykh gidro-  
elektrostantsiy"), 84 pp

BELOUS, B.P., otv. red.; KUZ'MINA, M.O., red.izd-va; GALIGANOVA,  
L.M., tekhn. red.

[Use of electric power networks for transmitting information] Ispol'zovanie silovykh setei dlia peredachi informatsii; materialy. Moskva, Izd-vo Akad. nauk SSSR, 1962. 98 p.  
(MIRA 15:11)

1. Soveshchaniye po ispol'zovaniyu silovykh setey dlya tseley telemekhaniki i svyazi, Leningrad, 1961.  
(Electric lines) (Telecommunication)

L. 9826 -44

ACC NR: AP6003968

SOURCE CODE: UR/0104/65/000/005/0090/0091

AUTHOR: Belous, B. P.

ORG: none

TITLE: VDEKh conference of power system control communications organisations

SOURCE: Elektricheskiye stantsii, no. 5, 1965, 90-91

TOPIC TAGS: electric engineering conference, communication conference, communications electric engineering

ABSTRACT: 27-31 October 1964, a conference was held at the "Electrification of the USSR" pavilion of the VDEKh (Vystavka Dostizheniy Narodnogo Khozyaystva, Exposition of Achievements of the National Economy) on the theme "Organization of control communications in power systems." 423 workers from 180 organizations took part and heard 4 full reports and 31 information reports on such themes as the development of power in the country, improvement of reliability in power system control, application of modern communications in planning control of power systems for agriculture, simplification of rules for crossing communications and power lines, complex automation of power system telephone communications, research work on the development of information transmission systems for power systems, high frequency cable communications systems, etc. Criticisms were directed at planning organizations for inefficient usage of available possibilities, improper frequency allocation, and at the industry as a whole and the ministry of communications for the lag in installation of the needed communications facilities with power systems. [SPRS]

SUB CODE: 09, 17 / SUBM DATE: none

ch 1/1

UDC: 654.165.006.3

29  
B

VODOLAZHCENKO, Yu.T.; BELOUS, D.A.; GOLUBCHIK, S.F.; LINCHEVSKIY,  
V.V.; FERETRUTOV, V.L.; YAKIMENKO, I.A.; CHICHEVA, L.I.,  
red.;

[Dismantling and assembling the DT-20 tractor] Razborka i  
sborka traktora DT-20. Moskva, "Kolos," 1964. 174 p.  
(MIRA 17:8)

[illegible][illegible]

BELOUS, G.A. [Bilous, H.O.]

Apparatus for determining the intensity and volume of salivation.  
Fiziol. zhur. [Ukr.] 7 no.2:284-285 Mar-Apr '61. (MIRA 14:4)

1. Ukrainskiy nauchno-issledovatel'skiy institut kommunal'noy  
gigiyeny, Kiyev.  
(PHYSIOLOGICAL APPARATUS) (SALIVA)

LAVRUSOV, V.P.; REZNOLY, V.D.; BELOUS, G.G. TISHCHENKO, V.G.

Polarographic study of the reaction between  $\alpha,\beta$  unsaturated carbonyl compounds and monosubstituted hydrazines. Part 2: quantitative study and phases of reaction between phenylhydrazine and substituted chalcones. Zhur. org. khim. 1 no.1:98-100 Ja '65. (MIRA 18:5)



BEZUGLYY, V.D.; DMITRIYEVA, V.N.; ALEKSEYEVA, T.A.; BELOUS, G.G.

Polarographic determination of 2-methyl-5-vinylpyridine. Zhur. anal.  
khim. 16 no. 4:477-482 J1-Ag '61. (MIRA 14:7)

1. All-Union Scientific-Research Institute of Monocrystals and  
Highly Pure Materials, Khar'kov.  
(Pyridine) (Polarography)

LAVRUSHIN, V.F.; BEZUGLYY, V.D.; BELOUS, G.G.

Polarographic study of unsaturated ketones. Part 1: Polarography of chalcone. Zhur.ob.khim. 33 no.6:1711-1717 Je '63.  
(MIRA 16:7)

1. Khar'kovskiy gosudarstvennyy universitet imeni A.M.Gor'kogo i Vsesoyuznyy nauchno-issledovatel'skiy institut monokristallov, stsintillyatsionnykh materialov i osobo chistykh khimicheskikh veshchestv, Khar'kov.

(Chalcone) (Polarography)

ACCESSION NR: AP4014583

S/0079/64/034/001/0007/0013

AUTHORS: Lavrushin, V.F.; Bezuglyy, V.D.; Belous, G.G.;  
Tishchenko, V.G.

TITLE: Polarographic studies of reactions between hydrazine  
derivatives and certain alpha-beta-unsaturated carboxylic  
compounds

SOURCE: Zhurnal obshchey khimii, v. 34, no. 1, 1964, 7-13

TOPIC TAGS: hydrazine derivative, phenylhydrazine, alpha-beta-  
unsaturated carboxylic compound, 1,3-diphenylpropenone, 1,3,5-tri-  
phenylpyrazoline, polarography, scintillator, luminescent additive,  
half-wave potential, reaction kinetics, activation energy, addition  
reaction, cyclization

ABSTRACT: The formation rate of 1,3,5-triphenylpyrazoline  $\Delta^2$   
during reaction of 1,3-diphenylpropenone with phenylhydrazine was  
studied under various temperature conditions, starting with obser-

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51"  
ACCESSION NR: AP4014583

uations on the behavior of the reaction product at the mercury drop cathode. The derivatives of this product are promising luminescent additives for the preparation of fluid and plastic scintillators. Polarographic determination was made against a background of a  $5 \times 10^{-2}$  M solution of  $(C_2H_5)_4NI$  in 92% methanol with reduced reaction time slowed by lowering the reaction temperature. The half-wave potential of the reaction product was -2.00 V, and the microcoulombimetric determination found a number close to 2 electrons participated in the reduction of one molecule. 1,3-diphenylpropenone formed 2 half waves of -1.26 and -1.80 V. These findings were used for quantitative determination of these compounds with the standard error of  $\pm 5\%$ . In studies of the reaction kinetics, reduction of the rate of synthesis at equimolar quantities of the reagents did not result in parallel reduction of 1,3-diphenylpropenone concentration. Reaction of 2 reagents was a second order reaction, and the synthesis reaction is a first order reaction. An excess of phenylhydrazine however led to a first-order reaction for both processes. The activating energies were 6 kcal/moles for the

Card 2/3

ACCESSION NR: AP4014583

addition reaction stage, 22 kcal/mole for the intermediate 1,3-diphenylpropenone hydrazone formation, and the cyclization was spontaneous. Orig. art. has: 5 figures, 1 table, 5 formulas.

ASSOCIATION: None

SUBMITTED: 19Jun62

DATE ACQ: 14Feb64

ENCL: 00

SUB CODE: CH

NO REF SOV: 003

OTHER: 011

Card 3/3

LAVRUSHIN, V.F.; EEZUGLYY, V.D.; BELOUS, G.G.

Polarographic investigation of unsaturated ketones. Part 2: Polarography of methoxy derivatives of chalcone, dibenzalacetone, and cinnamalacetophenone. Zhur.ob.khim. 34 no.1:13-20 Ja '64. (MIRA 17:3)

BELOUS, G.G.; BEZUGLYY, V.D.

Polarographic determination of 1,3,4-triphenyl-4<sup>2</sup>-pyrazoline in plastic scintillators. Zhur.anal.khim. 18 no.10:1250-1254 O '63. (MIRA 16:12)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut monokristallov, stsintillyatsionnykh materialov i osobochistykh khimicheskikh veshchestv, Khar'kov.

LAVRUSHIN, V.F.; BEZUGLYY, V.D.; BELOUS, G.G.; TISHCHENKO, V.G.

Polarographic study of reactions between hydrazine derivatives and some  $\alpha\beta$ -unsaturated carbonyl compounds. Part 1: Kinetics of the reaction between 1,3-diphenylpropenone and phenylhydrazine. Zhur.ob.khim. 34 no. 1:7-13 Ja '64.  
(MIRA 17:3)



BEZUGOLYY, V.D.; LAVRUSHIN, V.F.; BELOUS, G.G.

Polarographic study of unsaturated ketones. Part 1: Structure and reactivity of aromatic  $\alpha, \beta$ -unsaturated ketones. (Use of correlation equations). Zhur. ob. khim. 35 no.4:606-613 4p '65.

(MIRA 1815)

AUTHORS: Belous, G.S., Dudko, D.A. SOV-125-58-8-5/16

TITLE: A New Method of Casting Shaped Items and Ingots Without Lost Heads by Electric-Slag "Feeding-up" (Novyy sposob otlivki fasonnykh izdeliy i slitkov bez pribyley s pomoshch'yu elektroshlakovoy podpitki)

PERIODICAL: Avtomaticheskaya svarka, 1958, Nr 8, pp 32-36 (USSR)

ABSTRACT: The Institute of Electric-Welding AS UkrSSR carried out investigations from 1956-58 to find new ways of eliminating lost heads and improving the quality of cast metal. As a result, a new method of electric-slag "feeding-up" was developed which consists of feeding up the top portion of the casting during crystallization by liquid metal from a metal electrode being fused in a slag bath. The method completely eliminates the shrinkage cavity. Runners and other foundry wastes can be used for electrodes. Information includes a schematic drawing and photographs illustrating the new method. A "feeding-up" device was designed (Fig. 4) which was tested under industrial conditions. The authors thanked N.G.Gavrilenko, former director of the Plant imeni Il'yich, I.I. Pragin, assistant chief metallurgist and L.M. Baryshevskiy, chief metallurgist of the "Rostsel'mash" Plant, for their assistance

Card 1/2

SOV-125-58-8-5/16

A New Method of Casting Shaped Items and Ingots Without Lost Heads by  
Electric-Slag "Feeding-up"

in developing the new technology.

There is 1 schematic drawing, 1 table, 5 photos and 2 references,  
1 of which is Russian (1891) and 1 Soviet.

ASSOCIATION: Institut elektrosvariki imeni Ye.O. Patona AN USSR (Institute  
of Electric Welding imeni Ye.O. Paton AS UkrSSR)

SUBMITTED: May 19, 1958

1. Metallurgy 2. Castings--Quality control

Card 2/2

BELOUS, G. V.

"Factors Which Reduce [Possibly Restore] Dehydroascorbic Acid in the Tissues of an Animal Organism." Cand Med Sci, Laboratory of Biochemistry, Sci-Res Inst of Nutrition, Min Health Ukrainian SSR, Kiev, 1954. (KL, No 14, Apr 55)

SO: Sum. No. 704, 2 Nov 55 - Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (16).

DELOUS, G. V., TUSTANOVSKAYA, A. A., SEMENYAY, S. G., ARMSTRONG, YE. A.

"Factors of nutrition in the prevention of the toxic effect of insecticides."

report submitted at the 13th All-Union Congress of Hygienists, Epidemiologists and Infectionists, 1959.

GROMASHEVSKAYA, I.L.; VERZHEKHOVSKAYA, A.A.; ENLOUS, G.V.; GIRICHVA, G.A.  
(Kiyev)

Some biochemical indexes in the diverse course of Botkin's disease.  
Vrach.delo no.10:1059-1062 O '59. (MIRA 13:2)

1. Institut infektsionnykh bolezney AMN SSSR.  
(HEPATITIS, INFECTIOUS) (ALDOLASE)

GROMASHEVSKAYA, L.L.; BELOUS, G.V.

Photoelectrocolorimetric determination of bilirubin and the normal amount of it found in the serum. Lab.delo 5 no.6:46-48 N-D '60.  
(MIRA 13:11)

1. Institut infektsionnykh bolezney AMN SSSR, Kiev.  
(COLORIMETRY) (BILIRUBIN)

CHAPURSKAYA, N.A.; BORISENKO, N.G.; CHERNOVA, I.A.; CHERNIY, F.A.; BELOUS, G.V.

Results of dispensary service for convalescents following  
infectious hepatitis. Nauch. inform. Otd. nauch. med. inform.  
AMN SSSR no.1:28 '61 (MIRA 16:11)

1. Institut infektsionnykh bolezney (direktor - chlen korres-  
pondent AMN SSSR prof. I.L.Bogdanov) AMN SSSR, Kiyev.

\*



SHTABE, S.; BELOUS, I., starshiy kontroler-revizor

Report of bad planning and uneconomic operation. Fin. SSSR.  
19 no.10:33-35 0 '58. (MIRA 11:11)

1. Nachal'nik otдела Kontrol'no-revisionnogo upravleniya Ministerstva  
finansov USSR (for Shtabe).  
(Dnieper River--Shipping)

BELOUS, I.

Employ all potentials. Fin. SSSR 22 no.11:40-41 N '61.  
(MIRA 14:11)  
1. Glavnyy kontroler-revizor Kontrol'no-revizionnogo upravleniya  
Ministerstva finansov USSR.  
(Ukraine--Costs, Industrial) (Ukraine--Industrial management)

BELOUS, I.

Incomprehensible liberalism. Fin.SSR 37 no.1:74 Ja '63.  
(MIRA 16:2)  
1. Glavnyy kontroler-revizor Kontrol'no-revizionnogo upravleniya  
Ministerstva finansov UkrSSR.  
(Kiev—Ceramic industries—Finance)

BELOUS, I.F. [Bilous, I.F.], red.; BOGDANOV, O.P. [Bohdanov, O.P.], red.;  
GUCHEK, I.V. [Huchek, I.V.], red.; MARCHENKO, I.K., red.; SIROTA,  
N.I., red.; STEPANOV, T.K., red.; FEDCHUN, O.K., red.; PESHENKO,  
I.K., red.; SLUCHANSKIY, Sh. [Sluchans'kyi, Sh.], tekhred.

[The economy of Chernovtsy Province; statistical collection] ~  
Narodne hospodarstvo Chernivets'koi oblasti; statystychay  
zbirnyk. Chernivtsi, 1959. 171 p. (MIRA 13:6)

1. Chernovtsy (Province) Oblastnoye statisticheskoye upravleniye.  
(Chernovtsy Province--Economic conditions)

ILLEGIBLE

**BELOUS, I.P.**

**Improve the organization of shift work. Gidroliz. i lesokhim. prem.  
11 no.4:21-22 '58. (MIRA 11:6)**

- 1. Smenny master Sovetskogo sul'fitno-spirovogo zavoda.  
(Shift systems) (Alcohol)**

BELOUS, I.P.

Combined water and compressed air cleaning of pipes of dephlegmators and  
condensers. Gidroliz. i lesokhim.prom. 11 no.8:27 ' 58.

(MIRA 11:12)

1. Sovetskiy sul'fitno-spirovoy zavod.  
(Distillation apparatus)

BELOUS, I.P.

Improving the manufacture of ethyl alcohol. Gidroliz.i lesokhim.  
prom. 12 no.3:19 '59. (MIRA 12:6)

1. Sovetskiy sul'fitno-spirovoy zavod.  
(Kaliningrad Province--Ethyl alcohol)



BELOUS, I.P.

Improving the production of alcohol. Gidroliz. i lesokhim.  
prom. 13 no.6:27 '60. (MIRA 13:9)

1. Sovetskiy sul'fitno-spirovoy zavod.  
(Alcohol)

BELOUS, L. M. :

BELOUS, L. M.: "A Determination of the Final Orbit of the Yurlov-Akharov-Khassel' comet (March 1939)." Min Higher Education Ukrainian SSR. Kiev State U imeni T. G. Shevchenko. Kiev, 1956 (DISSERTATION FOR THE DEGREE OF CANDIDATE IN PHYSICOMATHEMATICAL SCIENCE)

SO.: Knizhanaya letopisI No 15, 1956, Moscow

BELOUS, L.M.

Iurlov-Akhmarov-Hassel's comet (1939 III). Astron.tsirk. no.168:  
7-9 '56. (MLRA 9:8)

1. Kiyevskiy gosudarstvennyy pedagogicheskiy institut imeni  
A.M. Gor'kogo.  
(Comets-1939)

BELOUS, L.M.

Definitive orbit of Bappu-Bok-Newkirk's comet (1949 IV). Biul.Inst.  
teor.astron. 9 no.8:569-575 '64. (MIRA 17:12)

BELOUS, L.M.

Definitive orbit of the Iurlov-Akhmarov-Hassel's comet (1939 III).  
Biul.Inst.teor. astron. 7 no.9:713-728 '60. (MIRA 14:3)  
(Comets-1939)

BELOUS, L.M.

Bappu-Bok-Newkirk's comet (1949 IV). Astron.tsir. no.226:2-3  
0 '61. (MIRA 16:1)

1. Zhitomirskiy pedagogicheskiy institut im. I.Franko.  
(Comets--1949)

USOSKIN, I.I.; BELOUS, L.N.

Use of the ganglionic blocking agent pyrilene in toxemias during the second half of pregnancy. Trudy Ukr. nauch.-issl. inst. eksper. endok. 19:418-420 '64. (MIRA 18:7)

1. Iz rodit'nogo otdeleniya Tsentral'noy klinicheskoy psikhonevrologicheskoy bol'nitsy Ministerstva puty soobshcheniya SSSR.

BELOUS, L.V.

AID P - 4551

Subject : USSR/Electronics

Card 1/2 Pub. 90 - 5/11

Authors : Solov'yev, Ye. G. and L. V. Belous

Title : Theory of the spiral line enclosed in a cylindrical semiconducting envelope.

Periodical : Radiotekhnika, 4, 31-35, Ap 1956

Abstract : The authors investigate methods of suppressing oscillations and stabilizing a traveling-wave tube by applying attenuation. To achieve attenuation of waves reflected at the output and causing oscillations, the authors used semiconducting attenuators uniformly applied along the length of the tube. Best results were obtained with a thin layer of Aquadag applied on the inside of the quartzite envelope in order to be close to the spiral. An analysis of dispersion equations permits finding that there is a point of maximum attenuation. The authors find the dependence of



Radiotekhnika, 4, 31-35, Ap 1956

AID P - 4551

Card 2/2 Pub. 90 - 5/11

attenuation on d-c surface resistivity, on finite conductivity of the attenuating film and on the wave velocity. Experimental work confirmed analytical results. Three diagrams, 4 references (2 Soviet) (1948-1950).

Institution : None

Submitted : D 7, 1954

CA Belous, M.A.

10

**Pseudoallicin.** M. A. Belous and I. Ya. Postovskii (S. M. Kirov Univ. Polytech. Inst., Sverdlovsk). *Zhur. Obshch. Khim.* (J. Gen. Chem.) 20, 1701-10 (1950). An analog of the active principle of garlic, allicin,  $\text{CH}_3\text{CH}(\text{CH}_2\text{SO}_2\text{SCH}_2\text{CH}(\text{CH}_3))_2$  (I), having the structure  $\text{CH}_3\text{CH}(\text{CH}_2\text{SO}_2\text{SCH}_2\text{CH}(\text{CH}_3))_2$  has been prep'd. and named *pseudoallicin* (II). It is cleaved by cysteine analogously to I, yielding  $\text{C}_6\text{H}_5\text{SO}_3\text{H}$  and  $\text{C}_6\text{H}_5\text{SSCH}_2\text{CH}(\text{NH}_2)\text{CO}_2\text{H}$  (III), m. 181-2°, established by independent reduction with Sn and HCl to  $\text{CH}_3\text{CHCH}_2\text{SH}$  and cysteine. II has 80% the potency of I against gram-pos. and gram-neg. organisms, and its activity is also unaffected by  $p\text{-H}_2\text{NC}_6\text{H}_4\text{CO}_2\text{H}$ ; L-cysteine destroys its antibiotic properties. Its toxicity is analogous to that of I. Stirring 200 g.  $\text{Na}_2\text{SO}_3 \cdot 7\text{H}_2\text{O}$  in 300 ml.  $\text{H}_2\text{O}$  at 60° with slow addn. (1.5 hrs.) of 100 g. allyl bromide, followed by stirring 1.5 hrs. and 1 hr. on a steam bath, gave 188-94 g. crude product, which on extrn. with hot 80% EtOH gave a double salt,  $8\text{CH}_3\text{CHCH}_2\text{SO}_3\text{Na} \cdot \text{NaBr}$ , decomp. about 235°, stable at room temp. This product (180 g.) and 330 g.  $\text{POCl}_3$ , heated 3 hrs. at 106°, then cooled at 60-60° and 80 min., cooled, stirred with 75 ml.  $\text{CHCl}_3$ , filtered (the insol. part shaken with ice water and extrd. again), and dried, gave 60.5 g.  $\text{C}_6\text{H}_5\text{SO}_3\text{Cl}$ , b.p. 73.5°, redistn. gave 60% pure product, b.p. 74°,  $n_D^{20}$  1.4780,  $d_4^{20}$  1.3322, which (2.8 g.) with  $\text{NH}_3$  in dry  $\text{Et}_2\text{O}$  gave 95% of the sulfonamide, m. 43° (from  $\text{C}_6\text{H}_5$ ); the latter (0.18 g.) with 0.25 g. Br in  $\text{CHCl}_3$  gave  $\text{CH}_3\text{CHBrCH}_2\text{SO}_3\text{NH}_2$ , m. 95-6° (from  $\text{C}_6\text{H}_5$ ). The chloride treated with  $\text{PhNH}_2$  in the cold, then kept 0.5 hr. on a steam bath, gave  $\text{C}_6\text{H}_5\text{SO}_3\text{NHPH}$ , m. 62° (from 40% EtOH). Addn. of 28.1 g. chloride to a soln. of 25 g. KOH in 50 ml.  $\text{H}_2\text{O}$  acid. with  $\text{H}_2\text{S}$  at 10-15°,

stirring 1 hr. at room temp., treatment with charcoal, evapn., and extrn. with hot EtOH gave 81%  $\text{C}_6\text{H}_5\text{SO}_3\text{NA}$ , m. 147-8° (from abs. EtOH); acidification of its aq. soln. yields S, and on warming  $\text{SO}_2$  evolves. The K salt (17.6 g.) and 13.5 g. allyl bromide in 120 ml.  $\text{Me}_2\text{CO}$  and 2 ml.  $\text{H}_2\text{O}$ , let stand overnight, followed by filtration and concn. in vacuo, washing an  $\text{Et}_2\text{O}$  soln. of the oil with  $\text{H}_2\text{O}$ , and reconcn. in vacuo gave 65% II, yellow undistillable oil, with strong garlic odor,  $n_D^{20}$  1.5341,  $n_D^{25}$  1.5338,  $d_4^{20}$  1.1850, surface tension against air at 10° 38.92 dyne/cm. It is sol. in the usual solvents, poorly sol. in  $\text{H}_2\text{O}$  and petr. ether. Sn and HCl yield  $\text{CH}_3\text{CHCH}_2\text{SH}$ ; alkalis cause decompn. with loss of the odor.  $\text{HgCl}_2$  and  $\text{AgNO}_3$  give insol. ppts., Br water and  $\text{KMnO}_4$  are rapidly decolorized. With cysteine-HCl in aq. EtOH at room temp., II yields within a few min. a ppt. of III (*S-allylmercaptocysteine*), m. 180-2° (decompn.), reaching 85% in 30 min. and isolated by adjusting the pH to 8.0 with bicarbonate. Allowed to stand overnight in a mixt. of HCl and Sn, then heated on a water bath in a stream of pure  $\text{H}_2$ , it readily evolved  $\text{CH}_3\text{SH}$  (re-

covered in an EtOH trap), while treatment of the filtered aq. residue with  $\text{H}_2\text{S}$  and evapn. gave L-cysteine-HCl, decomp. 170-8°.

G. M. Kosolapoff

BELOUS, M.D., agronom; SEMYKIN, I.Ye.; GROMIYCHUK, P.T., zven'yevaya, Geroy Sotsialisticheskogo Truda; KAGERMANOV, A.D., brigadir polevodcheskoy brigady kommunisticheskogo truda

What the participants of the December Plenum of the Central Committee of the CPSU say. Zemledelie 26 no.1:9-11 Ja'64.

(MIRA 17:5)

1. Predsedatel' kolkhoza "Druzhda" Khmel'nitskogo proizvodstvennogo upravleniya, Vinnitskoy oblasti (for Belous). 2. Glavnyy agronom sovkhoza "Kropotkinskiy" Kavkazskogo proizvodstvennogo upravleniya, Krasnodarskogo kraja (for Semykin). 3. Kolkhoz imeni XX s"yezda Kommunisticheskoy partii Sovetskogo Soyuza Ul'yanovskogo proizvodstvennogo upravleniya, Kirovogradskoy oblasti (for Gromiychuk). 4. Sovkhoz "Krasnoarmeyskiy" Urus-Martanovskogo proizvodstvennogo upravleniya, Checheno-Ingushskoy ASSR (for Kagermanov).

ILLEGIBLE

126-3-15/34

AUTHORS: Permyakov, V.G. and Belous, M.V.

126-3-15/34

TITLE: Carbide transformations during tempering of steel.

[Kardnyye, prevrashcheniya pri otpuske stali].

PERIODICAL: "Fizika Metallov i Metallovedeniye" (Physics of Metals and Metallurgy), 1957, Vol.4, No.3, pp. 490-499 (U.S.S.R.)

ABSTRACT: The most detailed investigation of the state of the carbide phase was carried out by Kurdyumov, G.V. and his team (1-3) between 1939 and 1947. They found that at a tempering temperature below 300 C carbide forms in iron which differs in composition and properties from that of cementite but they could not establish the composition of the low temperature carbide. Isaichev, I.V. (5) found that this carbide is unstable and becomes transformed into intermediate "rhombic carbide" on heating above 300 C and then into cementite. N. M. Popova (6-8) and M.P. Abruzov (9) arrived at the conclusion that only cementite forms at all tempering temperatures and the difference between the carbide phases forming at various tempering temperatures consists solely in the differing degree of dispersion and also in the differing bond with the basic phase; the conclusion of these authors is contradicted by later Soviet and foreign results (11-15). In an earlier paper of one of the authors (12) the

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126-3-15/34

## Carbide transformations during tempering of steel. (Cont.)

the correctness was confirmed of the above mentioned conclusions of G. V. Kurdyumov and I. V. Isaichev. In this paper an attempt is made at determining the composition of the carbide phase forming in the case of low temperature tempering of steel. Commercial grades of steel were tested, the compositions of which are given in a table, p.491. The graphs, Figs.1-9, give the results of magnetometric measurements of the various steels as functions of the temperature and the annealing time. It was established that the carbide formed by low temperature tempering, usually described by the formula  $Fe_3C^x$  differs in composition from that of cementite  $Fe_3C$ ;  $x$  in the formula  $Fe_3C^x$  the value of the index  $x \sim 2$ . The specific magnetisation of the low temperature carbide is approximately 100 to 110 Gauss  $cm^3/g$ .

Card 2/2

There are 9 figures and 21 references, 18 of which are Slavic.

SUBMITTED: March 6, 1956.

ASSOCIATION: Kiev Polytechnical Institute. (Kievskiy Politekhnikheskiy Institut).

AVAILABLE: Library of Congress

S/148/60/000/006/007/010

AUTHORS: Permyakov, V. G., Belous, M. V.

TITLE: Changes in the Carbide Phase During Tempering of Quench-Hardened Steel

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Chernaya metallurgiya, 1960, No. 6, pp. 119-123

TEXT: There are contradictory opinions on the composition and the properties of the carbide phase of low-temperature tempering and on the nature of processes causing abnormal changes in the steel properties within a temperature range of 300 - 400°C, so-called "third transformation". Contrary to some other authors it is assumed that low-tempering carbide is different from  $Fe_3C$  cementite by its composition, properties and the type of the crystal lattice. The composition of low-temperature carbide and its specific volume are determined for  $\gamma_{8A}$  (U8A),  $\gamma_{10A}$  (U10A) and  $\gamma_{12A}$  (U12A) steel. Magnetic effects of tempering were studied by the differential magnetic method. Changes in the specific volume during tempering were determined using a high-sensitive dilatometer. Specimens were water-quenched and supercooled in liquid oxygen. The quench-hardened specimens were subjected to high-speed heating in the

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S/148/60/000/006/007/010

Changes in the Carbide Phase During Tempering of Quench-Hardened Steel

magnetometer bath; their magnetic properties were photorecorded during heating and isothermal holding. A formula is given to calculate the index  $x$  in the formula for low-temperature carbide  $Fe_xC$  and the value of  $x$  was calculated to equal 2. Besides the quantitative analysis of magnetic curves, an analysis of tempering dilatograms was made. The composition of the carbide is expressed therefore by the formula  $Fe_2C$ ; its density is  $7.15 \text{ g/cm}^3$ . There are 2 graphs and 5 references: 4 Soviet<sup>2</sup> and 1 English.

ASSOCIATION: Kiyevskiy politekhnicheskii institut (Kiyev Polytechnic Institute)

SUBMITTED: November 17, 1959

✓B

Card 2/2



18.7500 1454, 1555, 1413

S/148/60/000/012/011/020  
A161/A133

AUTHORS: Permyakov, V. G., and Belous, M. V.

TITLE: On the nature of the "third transformation" volume effect in the tempering of hardened steel

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Chernaya metallurgiya, no. 12, 1960, 99 - 105

TEXT: The phenomenon of volume decrease in the "first transformation" with martensite decomposition, and of the volume increase in the "second transformation" with decomposition into an alpha-phase and a phase rich in carbon has been sufficiently elucidated (Ref. 1: E. Z. Kaminskiy, D. Katsnel'son. Zhurnal tekhnicheskoy fiziki, 15, no. 3, 1945; Ref. 2: V. N. Gridnev, A. S. Rapoport, Metallurg, 1940, no. 11; Ref. 3: B. L. Averbach, M. Cohen. Trans. of A.S.M., v. 46, 1950, 851; Ref. 4: W. Ellinghaus. Archiv fuer das Eisenhuettenwesen, 1956, no. 6 - 7), but the opinions on the "third transformation" are controversial. The subject experiments were an attempt to find a relation between the volume effects of transformation in the tempering process and the chemical composition, specific volume, and the struc-

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S/148/60/000/012/011/020  
A161/A133

On the nature of the "third transformation"...

ture of the elementary carbide lattice cell during low-temperature tempering. The three commercial steel grades investigated were

	(%)	C	Si	Mn	Ni	S	P	Cu
Y8A (U8A)	0.79	0.20	0.30	0.11	0.02	0.017	0.19	
Y10A (U10A)	1.09	0.20	0.22	0.13	0.00	0.013	0.15	
Y12A (U12A)	1.15	0.22	0.25	0.11	0.02	0.011	0.18	

Cylindrical specimens 4, 3 and 2.5 mm in diameter and 30 mm in length were hardened at temperatures ensuring complete austenite homogeneity and cold-treated in solid carbon oxide and liquid oxygen to reduce residual austenite. Its quantity was determined with a ballistic magnetometer. The hardened specimens were heated in a dilatometer furnace (Ref. 11: Permyakov, Belous. "Zavodskaya laboratoriya, 1956, no. 10) to 600°C and cooled to room temperature in the furnace at a cooling rate of 3 - 4°/min. Separate specimens were preliminarily tempered after hardening. The cold-deformed specimens were tested in the same way. The dilatograms were utterly different (Fig. 1 and 2). The obtained data are discussed with reference to the results obtained by other authors, including foreign ones (Ref. 5: A. P. Gulyayev, N. I. Burova. Metallovedeniye i obrabotka metallov, 1955, no. 1; Ref. 7:

Card 2/4

On the nature of the "third transformation"...

S/148/60/000/012/011/020  
A161/A133

V. G. Permyakov. Zhurnal tekhnicheskoy fiziki, v. 25, no. 5, 1955; Ref. 12: S. F. Yur'yev. Zhurnal tekhnicheskoy fiziki, v. 20, no. 5, 1950), and the authors of the present article come to the conclusion that the contraction in the "third transformation" is caused not by the recrystallization processes but by the transfer of low-temperature tempering carbide into intermediate carbide and further into cementite, and possibly this transfer is accompanied by continued C liberation from the solid alpha lattice (and hence additional lattice contraction), and maybe also by a very slight volume effect of the phase hardening relief. The specific volume of low-temperature grade carbide ( $0.138 \text{ cm}^3/\text{g}$ ) determined in the tests differs only a little (2 - 3%) from other data obtained by X-ray and electronographic analysis (Ref. 9: G. Krayner. Problemy sovremennoy metallurgii, 1952, no. 3; Ref. 15: Ye. L. Gal'perin, Yu. S. Terminasov. Kristallografiya, v. 2, 1957, no. 5; Refs. 8 and 14 see English-language publications). There are 5 figures and 15 references: 11 Soviet-bloc and 4 non-Soviet-bloc. The three references to English-language publications read as follows: B. L. Averbach and M. Cohen. Trans. of A.S.M., v. 46, 1950, 851; K. H. Jack. Journ. of the Iron and Steel Inst., 169, P. II, 1951; F. S. C. Boswell. Acta crystallogr., 1958, no. 1, 11.

Card 3/4

23622

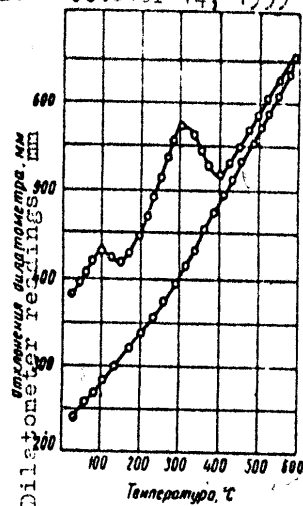
S/149/60/000/012/011/020  
A161/A133

On the nature of the "third transformation"...

ASSOCIATION: Kiyevskiy politekhnicheskii institut (Kiev Polytechnic Institute)

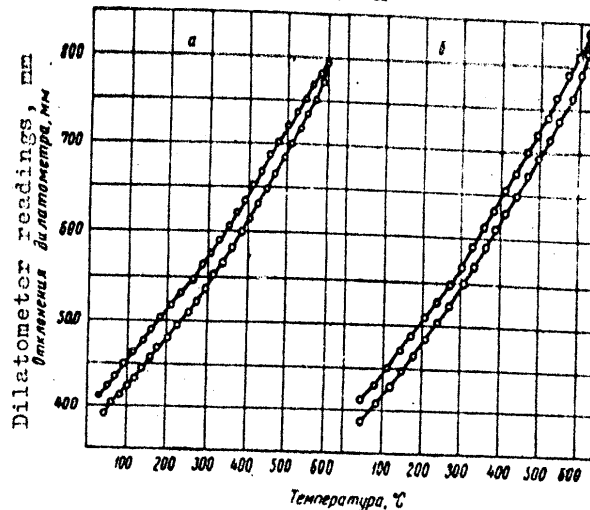
SUBMITTED: October 14, 1959

Fig. 1.  
Hardened  
U12A



Card 4/4

Fig. 2. Cold-worked U12A



PERMYAKOV, V.G.; BELOUS, M.V.

Magnetic method of quantitative carbide analysis of carbon steels.  
Fiz. met. i metalloved. 10 no.2:317-320 Ag '60. (MIRA 13:9)

1. Kiyevskiy politekhnicheskii institut.  
(Phase rule and equilibrium) (Magnetic testing)

S/126/60/010/006/019/022  
E111/E452

AUTHORS: ~~Belous, M.V.~~ and Cherepin, V.T.

TITLE: Mechanism of Carbide Transformation in Tempering  
Hardened Carbon Steel

PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol.10, No.6,  
pp.912-924

TEXT: The authors point out that according to recent evidence (Ref.2, 5, 11, 12 and 13) on the difference between low-temperature ( $\epsilon$ -) carbide and equilibrium-cementite, transformation of the former must be accompanied by both crystal-lattice rearrangement and change in chemical composition. Both authors have been active in this field. The present research was aimed at elucidating the general rules governing the mechanism and kinetics of the various stages mainly of the "third transformation" during heating of hardened steel. For most experiments, types Y8A (U8A) and Y12A (U12A) steels were used (respective compositions, %: 0.77, 1.13 C; 0.30, 0.22 Si; 0.33, 0.21 Mn; 0.16, 0.12 Ni; 0.11, 0.06 Cr; 0.012, 0.020 S; 0.014, 0.011 P). Specimens were hardened from 1000°C in

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S/126/60/010/006/019/022  
E111/E452

Mechanism of Carbide Transformation in Tempering Hardened Carbon Steel

water at room temperature and then immediately immersed in liquid oxygen or in a solid CO<sub>2</sub> - petroleum mixture at -78°C. The study of transformations was carried out with rapid electric heating on an installation providing simultaneous registration of the main parameters and time. Heating rates of 50 to 60000°C/sec were obtainable and heating could be stopped at any desired temperature to be followed after 0.01 to 0.02 seconds by cooling at 1500 to 2000°C/sec by a stream of water. Cherepin (with Gridnev: Ref.14) has described the installation in detail. A type 5P3-10 (LG2-10) installation was used for induction tempering, curves of specimen length and temperature changes being obtained with the aid of a special dilatometric attachment previously described by Belous (with Permyakov: Ref.15) and a type 950-302 oscillograph; cooling here was by air. Thermomagnetic analysis in strong fields (Ref.16) was also used as described in other papers of the authors (Ref.11, 17, 18). A series of dilatometric measurements with slow (2 to 3°C/min)

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# Mechanism of Carbide Transformation in Tempering Hardened Carbon Steel

heating at a magnification of 2008 (Ref.19) were made. The calculation of dilatometric curves for rapid heating has already been described (Ref.20). Fig.1 shows a typical combined oscillogram for U12A steel heated at 1700°C/sec, giving elongation, temperature, voltage-drop, current and specific heat (Curves 1, 2, 3, 4, 5 respectively) against time (0.1 sec divisions) the corresponding zero-lines being marked (0-1, 0-2 and so on). Dilatometric curves for heating rates of 100 to 60000°C/sec are given in Fig.2. Plots of length change and temperature against heating rate (Fig.3, top and bottom graphs respectively) show that tempering processes associated with volume change in the first and third transformations (Curves marked I and III respectively) are fulfilled sufficiently at all the heating rates. With increasing heating rate, the transformation time falls approximately hyperbolically (Fig.4). The authors conclude that the idea of the reverse martensite transformation is not valid for the range of rates studied. Further information on the carbide transformation process was obtained in the tempering experiments.

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in which the combined use of dilatometric and magnetic analysis is particularly fruitful. In Fig.5, the left part gives the dilatometric curve for tempering of U12A steel and the right hand part gives magnetometer deviations as functions of temperature for repeated heating and cooling of a tempered specimen. The authors show a quantitative relation can be established between the value of the observed magnetic effects and the composition of the carbide phase produced in electric tempering up to the temperature of volume-effect completion. The relation shows that  $x$  in  $Fe_xC$  rises from 2.10 to 2.79 as tempering temperature rises from 470 to 740°C. Similar conclusions were obtained from the results of rapid induction tempering. Fig.7, left and right hand respectively, gives the dilatometric curves and the magnetometer deviations as a function of temperature for U12A steel in repeated heating and cooling of a tempered specimen. For the rearrangement of the carbide-phase crystal lattice in the "third transformation" the authors propose the term "v-transformation" and for the

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# Mechanism of Carbide Transformation in Tempering Hardened Carbon Steel

composition change "x-transformation". The first gives a cementite-lattice carbide,  $\text{Fe}_{2.3}\text{C}$  (270°C Curie point). Fig. 8 shows the percentage-completion of these transformations as functions of temperature. The effect of deformation on transformation is shown in Fig. 9 by plots of magnetometer deviations against temperature (heating and cooling), for hardened and tempered U12A steel specimens, cold drawn to 35 to 70.8% deformation; X-ray patterns for undeformed and deformed (70%) specimens are shown in 1 and 2, respectively, of Fig. 10. 3, 4 and 5 give, respectively, patterns of carbide residues from undeformed, 39% deformed and 70% deformed specimens. The general conclusion is that the first stage of transformation in tempering is rearrangement (at 380 to 490°C) of the  $\epsilon$ -carbide lattice into that of cementite, in the second stage gradual diffusion of carbon concentration changes lead to an approach of the carbide to the stable  $\text{Fe}_3\text{C}$  form. There are 10 figures and 32 references 25 Soviet and 7 non-Soviet.

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Mechanism of Carbide Transformation in Tempering Hardened Carbon Steel

ASSOCIATION: Kiyevskiy politekhnicheskii institut  
(Kiyev Polytechnical Institute)

SUBMITTED: March 29, 1960

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BELOUS, M. V.

PHASE I ROCK EXPLOSION SOV/5511  
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 Kievskoye obshchestvo pravleniya.  
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 Serdyuk, Engineer.

Card 1/10

PURPOSE: This collection of articles is intended for scientific  
 workers and technical personnel of research institutes, plants,  
 and schools of higher technical education.

COVERAGE: The collection contains papers presented at a convention  
 held in Kiev on problems of physical metallurgy and methods of  
 the heat treatment of metals applied in the machine industry.  
 Phase transformations in metals and alloys are discussed, and  
 results of investigations conducted to ascertain the effect of  
 heat treatment on the quality of metal are analyzed. The res-  
 ults of research on the quality of metal with given mechanical properties  
 is discussed. Methods of heat treatment of cast irons and alloys  
 in different conditions of service are discussed. The col-  
 lection includes papers dealing with the heat treatment of cast  
 iron, and protection of cast iron. No personal titles  
 are mentioned. Articles are accompanied by references, mostly  
 Soviet.

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S/126/61/012/005/008/028  
E091/E335

AUTHORS: Belous, M.V. and Cherepin, V.T.

TITLE: Changes in the carbide phase of steel under the influence of cold plastic deformation

PERIODICAL: Fizika metallov i metallovedeniye v.12 no. 5  
1961, 685 - 692

TEXT: The steel Y12A (U12A) in the form of rods of 2.5 mm diameter of the following chemical composition was used for the investigation: 1.13% C, 0.06% Cr, 0.22% Si, 0.21% Mn, 0.12% Ni, 0.020% S and 0.011% P. The specimens were water-quenched from 1 000 °C; the specimens were subjected to tempering for 2 hours at 450 - 700 °C (at intervals of 50 °C) in order to obtain a carbide phase of varying dispersion and were subsequently cold-worked by drawing through a die. The degree of deformation was calculated from the reduction in area. The chief methods of investigation were microstructural, X-ray structural and magnetic analyses. The magnetic characteristics of the specimens were studied by means of a magnetometer with a differential carrier. Annealed armco iron specimens of the following composition

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were used as standards. 0.015% C, 0.19% Si, 0.06% Mn and less than 0.01% S and P. The structure of tempered specimens was studied metallographically to establish the quantitative relationship between the changes in magnetic properties of the carbide on deformation and the carbide particle size. The photomicrographs obtained were used to calculate the average carbide particle size. Apart from the study of the microstructure and magnetic properties, an X-ray investigation of the steel specimens after various mechanical and heat treatments as well as of the carbide deposits precipitated by an electrolytic method, was carried out. It was found that the nature of the action of plastic deformation of steel specimens on the properties of carbide particles depended, to a considerable extent, on the dimensions and shape of the latter. It is mainly the properties of ferrite which change at small reductions in area. Deformation of cementite occurs at large percentages of reduction in area, when the matrix becomes sufficiently hard. Thus, it can be expected that the magnetic properties of cementite will change more noticeably at higher degrees of

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deformation. An increase in the effectiveness of any factor on the structure of carbide particles causes an ever-increasing rise in magnetization on plastic deformation. An irreversible change in the magnetization of deformed specimens occurs between 300 and 600 °C, i.e. at temperatures at which both the carbide phase of the deformed steel and the cementite are paramagnetic. An analysis of the fine crystalline structure of the carbide phase led to the conclusion that an increase in the degree of deformation leads to an ever-increasing breakdown of the zones of coherent dispersion of X-rays and to an increase in secondary stresses. The carbide phase of cold-deformed steel always has a crystalline lattice of the cementite type; the carbon content of this phase is higher than that of cementite and, under certain conditions, can reach approximately 30 at.%. It is concluded that the metastable carbide phase  $\chi_{Fe_xC}$ , reported by a number of research workers, represents cementite of changed composition. B.A. Apayev, G.V. Kurdyumov, L.I. Lysak and L.S. Moroz are mentioned in the article in connection with their contributions in this field.

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Changes in the carbide phase of ... E091/E335

There are 6 figures, 1 table and 21 references: 14 Soviet-bloc and 7 non-Soviet-bloc. The four latest English-language references mentioned are: Ref. 6: D.W. Wilson, Trans. ASM, 1955, 47; Ref. 19: W.R. Thomas and G.M. Leak: J. Iron and Steel Inst., 1955, 180, Part 2; Ref. 20: D.W. Wilson, Acta met., 1957, 5, no. 6; Ref. 21: G. Williamson, R. Smallman - Phil. Mag., 1956, 1, 34. ✓

ASSOCIATION: Kiyevskiy politekhnicheskii institut  
(Kiyev Polytechnical Institute)

SUBMITTED: March 9, 1961

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S/032/61/027/002/025/026  
B124/B201

AUTHORS: Permyakov, V. G. and Belous, M. V.

TITLE: Exchange of experience

PERIODICAL: Zavodskaya laboratoriya, v. 27, no. 2, 1961, 235

TEXT: For the purpose of studying phase transitions at increased rates of heating the authors suggest to use a dilatometric accessory (see Fig.) to the universal nine-loop oscilloscope. The quartz and metal rollers are supported by specimen (1) in quartz tube (2), as well as on brass plate (3) with the reflector (4). The brass plate is mounted on steel axis (5). The support of the agate bearings (6) is fastened to brass plate (7), which has a window for the passage of the roller. A clamping spring is fastened to it. Brass plate (7) is screwed to the frame of the measuring loop by means of screws (8) and (9). The quartz tube is placed in a metal bushing (10). Its flange is fastened to the brass plate by means of two bolts, which, in turn, is fastened to the frame of the loop by two studs. During operation the dilatometer is introduced into the socket of the loop, and an output inductor is mounted on the quartz tube. [Abstracter's note:

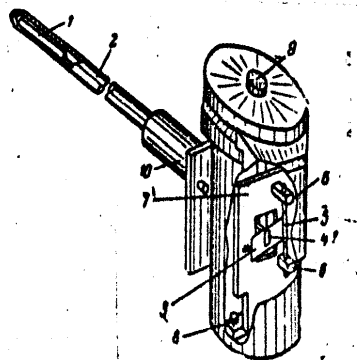
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Exchange of...

S/032/61/027/002/025/026  
B124/B201

This is almost a full translation]. There is 1 figure.

ASSOCIATION: Kiyevskiy politekhnicheskii institut (Kiev Polytechnic Institute)



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